



SEMBENELLI

CONSULTING

A4 MILAN – BERGAMO MOTORWAY

Widening to 8 lanes, Italy, 2001-2003

PROJECT CHARACTERISTICS

Works: Widening from 6 to 8 lanes a section of the A4 Motorway in presence of traffic including the construction of 6 interchanges, 2 bridges (65 and 163 m long), 2 railway flyovers, a three-storey parking over the motorway, 28 flyovers, 3 pedestrian crossings with 5 parking areas and annexed facilities, 6 underpasses, 7 heliports, 22 emergency exits, vegetated anti-noise barriers for an overall length of 12 km, landscaping works in many areas surrounding the motorway

Purpose: improvement of capacity and safety levels and upgrading of the motorway section motorway carrying the heaviest traffic volume in North Italy.

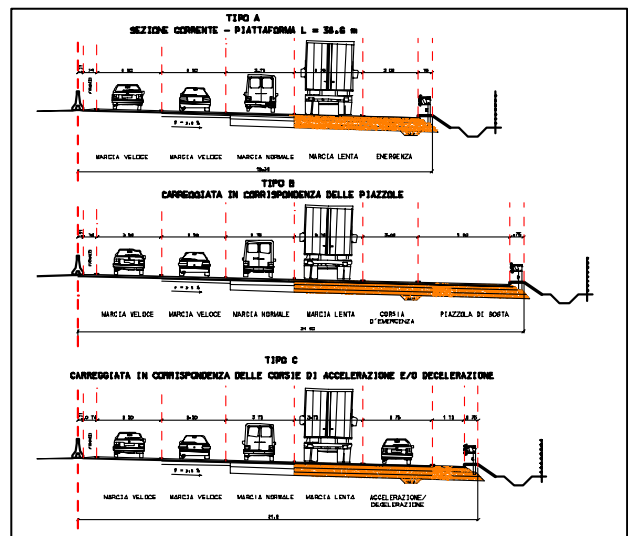
Dimensions:

- Length: 37 Km
- Section: from existing 31 to 38.6 m
- Average Equivalent Traffic: 125 000 vehicles/day
- Project cost: 250 000 000 US \$

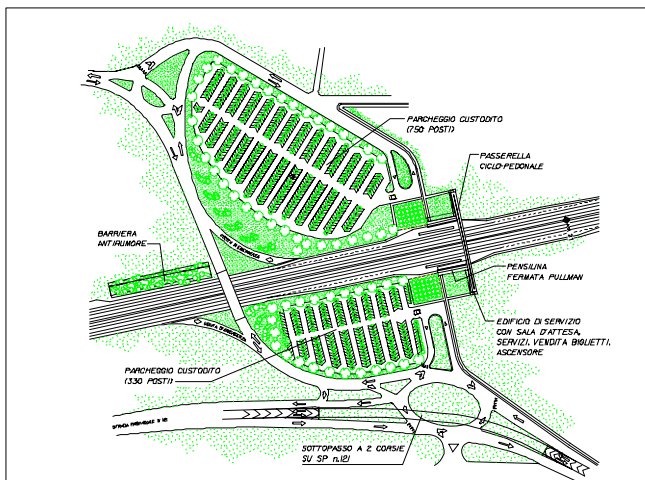
PROFESSIONAL SERVICES OFFERED

Preliminary design carried out in association with BCV Progetti s.r.l. and Gregotti Associati International.

The project included: analysis of the existing situation, traffic data analysis (speed when traffic is heavier, level and typology of traffic in the two directions), optimisation of flows (upgrading and modification of the existing access roads, improvement of the capacity of the road network outside the motorway), study of the lay-out in view of minimising interferences with pre-existing constructions and of reducing the impact on the environment.



Aerophotogrammetric and celerimetric surveys, design and static computation of the new Adda and Brembo bridges and study of the new double track railway fly-over for the Treviglio-Bergamo train line, jobsite organisation study, quantities take-off and cost evaluation. Expropriation Plan with relevant collection of all necessary land ownership data. All drawings produced using DTM and CAD 3D system



The design for the upgrading of the motorway foresaw **new facilities for the users** such as equipped parking areas near the toll barriers and a three-storey park building accessible directly from the motorway, connected both to Orio al Serio airport and to a large commercial center.

All new important structures, such as the bridges over the Adda and Brembo rivers and the 2 railway flyovers have been foreseen alongside to the existing ones so that they may be built without traffic interruptions.

Special attention was paid to possible emergency scenarios and to **safety program**, including heliports connected to the motorway, emergency exits and escape routes to hospitals and from firemen barracks, were defined.